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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :
Hiroshi KANNAN, et al. : EXAMINER: GOLIGHTLY, ERIC W.
SERIAL NO: 10/525,797 :
FILED: FEBRUARY 25, 2005 : GROUP ART UNIT: 1714
FOR: SUBSTRATE PROCESSING UNIT, :
METHOD OF DETECTING END
POINT OF CLEANING OF
SUBSTRATE PROCESSING UNIT,
AND METHOD OF DETECTING
END POINT OF SUBSTRATE
PROCESSING

REPLY BRIEF

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

This is a Reply to the Examiner's Answer dated May 12, 2010.

Application Serial No. 10/525,797
Reply to Examiner's Answer dated May 12, 2010

I. STATUS OF THE CLAIMS

Claims 1-14 and 17-21 are pending. Claims 1-5, 8-12 and 17-21 stand rejected, Claims 6, 7, 13 and 14 are withdrawn from consideration, Claims 15 and 16 are canceled, and the rejection of Claims 1-5, 8-12 and 17-21 is herein appealed.

Application Serial No. 10/525,797
Reply to Examiner's Answer dated May 12, 2010

II. GROUNDS FOR REJECTION TO BE REVIEWED ON APPEAL

Whether Claims 1-5, 8-12 and 17-21 are unpatentable under 35 U.S.C. § 103(a) over Tsukazaki (U.S. Patent No. 5,837,094) in view of Kubli (U.S. Patent No. 5,636,287).

III. ARGUMENT

A. Overview.

The Examiner's Answer clarifies certain aspects of the final rejections. Nevertheless, Appellants still believe that the final rejections are improper for the reasons provided in the Appeal Brief, and for the following additional reasons, which address points raised in the Examiner's Answer. The following points summarize the primary issues addressed in this Reply.

1. The Examiner's Answer fails to consider all of the limitations recited in the claims.

The examiner clearly erred by failing to consider *all* of the words in the claims on appeal in judging the patentability of the claims against the cited references. The Examiner's Answer attempts to sidestep this requirement by (1) incorrectly asserting certain limitations relating to the operating state detector recited in Claims 1 and 8 are an "intended use" that do not limit the structure of the operating state detector, and (2) incorrectly asserting the claims do not require the operating state detector to determine a change in an amount of or a molecular weight of the gas that passes through the exhauster. Both of these arguments are without merit.

2. The functional limitations recited in the claims are not inherently met by the cited references.

The claims on appeal employ functional language. Functional claim language carries a risk the prior art *inherently* possesses the physical characteristics that make the device disclosed in the prior art *capable of* performing the function recited in the claims. *See In re Schreiber*, 128 F.3d 1473, 1478 (Fed. Cir. 1997). The examiner clearly erred in finding the combination of the devices in Tsukazaki and Kubli are *inherently* capable of performing *all*

of the functions of the operating state detector or the end point detector recited in either of Claims 1 or 8 *without modification*. Instead, the devices of Tsukazaki and Kubli would require *several* modifications before they would be capable of performing *all* of the functions of the operating state detector or the end point detector recited in either of Claims 1 or 8.

3. The Examiner's Answer fails to make a proper rejection under 35 U.S.C. § 103(a).

The question of whether a device is “capable of” performing a function is a question of inherency, whereas the question of whether a device is “capable of *being modified to*” perform a function is a question of obviousness under 35 U.S.C. § 103(a). As noted above, the devices of Tsukazaki and Kubli would require *several* modifications before they would be capable of performing *all* of the functions of the operating state detector or the end point detector recited in either of Claims 1 or 8. The examiner clearly erred by failing to articulate any reasoning with some rational underpinning to support a legal conclusion as to why it would be obvious *to modify* the devices of Tsukazaki and Kubli so as to be capable of performing *all* of the functions of the operating state detector or the end point detector recited in either of Claims 1 or 8. “[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006), *cited with approval in KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

4. The Examiner's Answer fails to properly address several of the features recited in dependent Claims 4 and 11, Claims 5 and 12, and Claim 17.

The Examiner's Answer fails to specifically point to *any* teachings in the cited references that either disclose or suggest (1) an end point detector that detects the end point of a cleaning or a processing based on *a change in the intensity of vibration*, as recited in Claims 4 and 11, (2) an operating state detector that includes a *rotation detector* that detects the change in the amount of or the molecular weight of the gas that collides with the rotor blades *by detecting a rotation of a body of revolution*, as recited in Claims 5 and 12, or (3) an end point detector that detects an end point of a cleaning or a processing by determining whether the amount of or the molecular weight of a gas colliding with the rotor blades *stabilizes* with the progress of the processing or cleaning following *a period of initially instability*.

5. The Examiner's Answer fails to properly address the means plus function limitations recited in Claims 20 and 21.

The Examiner's Answer fails to point to any teachings in the art that, either inherently or otherwise, corresponds to the structural features recited in Claims 20 and 21. Specifically, the Examiner's Answer fails to demonstrate *how* the cited references include any structure that provides a *link between* the detection of the effects of collisions between a gas so as to determine of a change in an amount of or a molecular weight of the gas that passes through the exhauster, and a rotor blade of an exhauster and an end point detector that detects an end point of a cleaning or a processing.

B. The Examiner's Answer fails to consider all of the limitations recited in the claims.

It is well established that “[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art.” *In re Wilson*, 424 F.2d 1382, 1385 (CCPA

1970). In the present case, the examiner clearly erred by failing to consider all of the words in the claims on appeal. For example, Claim 1 recites, among other things:

an operating state detector that detects effects of collisions between a gas and the rotor blades so as to determine a change in an amount of or a molecular weight of the gas that passes through the exhauster; and

an end point detector that detects an end point of the cleaning based on a detection result from the operating state detector.

However, the Examiner's Answer applies a selective reading to the limitations of Claim 1, and only considers the following words:

an operating state detector that detects effects of collisions between a gas and the rotor blades; and

an end point detector that detects an end point of the cleaning.

Thus, the Examiner's Answer *fails to consider* the following underscored limitations of Claim 1:

an operating state detector that detects effects of collisions between a gas and the rotor blades so as to determine a change in an amount of or a molecular weight of the gas that passes through the exhauster; and

an end point detector that detects an end point of the cleaning based on a detection result from the operating state detector.

The Examiner's Answer tries to sidestep the requirement to consider the above-noted limitations in two ways: (1) incorrectly asserting the above-noted limitations are an "intended use" that do not limit the structure of the devices recited in the claims, and (2) incorrectly asserting the claims do not require the operating state detector to determine a change in an amount of or a molecular weight of the gas that passes through the exhauster. Both of these arguments are without merit.

The above-noted assertions were made for the first time in the Examiner's Answer. These assertions and the examiner's accompanying interpretation of the

above-noted language are surprising in view of the fact this language was recommended by the examiner during a Personal Interview, as evidenced by the Interview Summary dated June 15, 2009, which states, among other things, "Michael Barr and Eric Golightly recommend amending the claims to emphasize that the operating state detector detects the effects of collisions between a gas and the rotor blades so as to determine a change in the amount of, or a molecular weight of, the gas that passes through the exhauster."

1. The claims on appeal do not recite an "intended use."

The Examiner's Answer fails to consider several limitations in several of the claims merely because the claims employ functional language. For example, pages 13-17 of the Appeal Brief argue that the combination of Tsukazaki and Kubli fails to disclose or suggest an operation state detector that: (1) detects effects of collisions between a gas and the rotor blades, and (2) determines a change in an amount of or a molecular weight of the gas that passes through the exhauster. In response the Examiner's Answer states

Assuming, arguendo, appellants are correct that there [sic] Kubli is silent regarding detecting the effects of such collisions so as to determine a change in an amount of or a molecular weight of the gas or detecting an end point of a cleaning, this deals with the intended use of the apparatus, rather than a patently significant structural distinction.¹

(Examiner's Answer at page 9). The examiner takes a similar position with respect to the limitations recited in dependent Claim 17.² However, it is improper to disregard a functional

¹ Examiner's Answer at paragraph bridging pages 8 and 9. See also the statements on page 10, that "[t]he recitation 'so as to determine a change in the amount ...' is directed to an intended use, not a structural distinction."

² Examiner's Answer at page 16, first full paragraph.

limitation as an “intended use” solely because it is functional. With regard to functional limitations, M.P.E.P. § 2173.05(g) states:

A functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used.

See also *In re Sullivan*, 84 USPQ2D 1034, 1038-1040 (Fed. Cir. 2007) (Federal Circuit criticizing U.S. PTO Board’s focus upon “intended use”).

In the context of the claims on appeal, Claims 1 and 8 recite an operating state detector that detects effects of collisions between a gas and the rotor blades so as to determine a change in an amount of or a molecular weight of the gas that passes through the exhauster. Thus, the operating state detector recited in Claims 1 and 8 is *a thing* that must be able to perform two distinct functions: (1) detect effects of collisions between a gas and the rotor blades, and (2) determine a change in an amount of or a molecular weight of the gas that passes through the exhauster. It is entirely proper to define the operating state detector by what the operating state detector *does*. As the predecessor court to the Court of Appeals for the Federal Circuit noted in *In re Swinehart*, 439 F.2d 210, 212 (CCPA 1971):

We take the characterization “functional”, as used by the Patent Office and argued by the parties, to indicate nothing more than the fact that an attempt is being made to define something (in this case, a composition) by what it does rather than by what it is (as evidenced by specific structure or material, for example). In our view, there is nothing intrinsically wrong with the use of such a technique in drafting patent claims. Indeed we have even recognized in the past the practical necessity for the use of functional language.

(internal citations omitted).

The features of the operating state detector recited in Claims 1 and 8 can not be discarded merely because they employ functional language, as they limit the structure of the apparatus. For example, such a claim would not encompass an arrangement in which an operating state detector does not both (1) detect effects of collisions between a gas and the rotor blades, and (2) determine a change in an amount of or a molecular weight of the gas that passes through the exhauster. As such, the claims on appeal positively recite features which should not be disregarded out of hand merely because they utilize functional language.

Nevertheless, the Examiner's Answer applies a selective reading to Claim 1 by clearly giving weight to the functional aspect of "detecting" of the operation state detector, but then, inexplicably, dismissing the functional aspect of "determining" as an "intended use." This selective reading of the claims is improper as it fails to give all words in the claims consideration in judging the patentability of the claims against the cited references. As discussed in detail below, when all of the limitations in the claims are considered, there are several limitations that are not disclosed or suggested by the cited references.

2. The claims on appeal do not recite an "operator."

The Examiner's Answer also attempts to dismiss the phrase "determine a change in an amount of or a molecular weight of the gas that passes through the exhauster" by asserting the determination can be performed by an "operator" instead of the operation state detector recited in the claims. Specifically, page 11 of the Examiner's Answer states:

It is noted that the claims do not require that the apparatus perform the step of determining the change. "So as to" means "in order to". So, detecting the collision effects "so as to determine a change" means detecting the collision effects in order to determine a change...The claims thus allow for this determination to be performed by the apparatus, but not limit the determination to be performed by the apparatus, i.e. the determination could be performed by an operator

observing the operating state detector detection of collision effects. Whether or not the collision detection is done "so as to", i.e. "in order to", determine a change in an amount of or molecular weight of the gas is up to an operator.

This statement is demonstrably false. As noted above, Claims 1 and 8 each recite (emphasis added):

an *operating state detector* that detects effects of collisions between a gas and the rotor blades *so as to determine* a change in an amount of or a molecular weight of the gas that passes through the exhauster...

Thus, it is the *operating state detector* that (1) detects and (2) determines. There is no operator recited in either of Claims 1 or 8. Nor are Claims 1 or 8 method claims that broadly recite detecting and determining without tying either to a particular machine. Instead, the linking phrase "so as to" further limits the *operating state detector* to require that the determination *performed by the operating state detector* be based on the detection *performed by the operating state detector*.

Thus, the examiner clearly erred in finding the claims do not require that the operating state detector to determine a change in an amount of or a molecular weight of the gas that passes through the exhauster. As discussed in detail below, when *all* of the limitations in the claims are considered, there are several limitations that are not disclosed or suggested by the cited references.

C. The functional limitations recited in the claims are not inherently met by the cited references.

The examiner clearly erred in finding the combination of the devices in Tsukazaki and Kubli are *inherently* capable of performing *all* of the functions of the operating state detector or the end point detector recited in either of Claims 1 or 8 *without modification*.

The claims on appeal employ functional language. For example, as discussed at greater length above, Claims 1 and 8 each recite an operating state detector that detects effects of collisions between a gas and the rotor blades so as to determine a change in an amount of or a molecular weight of the gas that passes through the exhauster. Functional claim language carries a risk the prior art *inherently* possesses the physical characteristics that make the device disclosed in the prior art *capable of* performing the function recited in the claims. *See In re Schreiber*, 128 F.3d 1473, 1478 (Fed. Cir. 1997). Specifically, the court found that the structure of a spout for dispensing oil from an oil can disclosed in the prior art *anticipated* the claims on appeal because the spout would be *inherently* capable of functioning to dispense kernels of popped popcorn in the manner set forth in the appealed claim 1 *without changing the proportions* of the spout disclosed in the prior art. *Id.* at 1478. In essence, the existing structure of the prior art spout met the standard for *inherently* performing the function recited in the claims *because there was no need to modify the structure of the spout to perform the recited function.*

In the present case, any device that results from the combined teachings of Tsukazaki and Kubli would require *several* modifications that are *well beyond* the teachings of either of Tsukazaki and Kubli before such a device would be capable of performing *all* of the functions of the operating state detector or the end point detector recited in either of Claims 1 or 8. Specifically, Claims 1 and 8 each recite a *link between* the detection of the effects of collisions between a gas so as to determine of a change in an amount of or a molecular weight of the gas that passes through the exhauster and an end point detector that detects an end point of a cleaning (claim 1) or a processing (claim 8) that is *entirely absent from* the teachings of the cited references, and *well beyond the capabilities of* the structure of the

devices described in the cited references. Therefore, such a device would not be inherently capable of performing *all* of the functions of the operating state detector or the end point detector recited in either of Claims 1 or 8.

The Examiner's Answer asserts it would be obvious to combine the noise reduction device of Kubli with the device of Tsukazaki for the purpose of reducing noise.³ The endpoint detection device of Tsukazaki is a laser-based monitoring device located *upstream* of the exhaust device of Tsukazaki. Kubli is solely concerned with cancellation of unwanted audible noises that emanate from *rotating devices*.⁴ At best, incorporating the noise reduction device of Kubli into the device of Tsukazaki in order to reduce the noise of the rotating body (exhaust device) of Tsukazaki would result in device that would include: (1) the endpoint detection device Tsukazaki located *upstream* of the exhaust device of Tsukazaki, and (2) a noise reduction device as described in Kubli that is connected to the exhaust device of Tsukazaki, and is thereby *separate and distinct* from the endpoint detection device Tsukazaki.

Such a modified device would not be inherently capable of:

- (1) detecting effects of collisions between a gas and the rotor blades *so as to determine a change in an amount of or a molecular weight of the gas that passes through the exhauster*, or
- (2) detecting an end point of the cleaning *based on a detection result from the operating state detector*,

as recited in Claim 1. Even assuming, for the sake of argument, the noise reduction device of Kubli in the resulting modified device would be inherently capable of detecting effects of collisions between a gas and the rotor blades as asserted by the examiner at the paragraph

³ Examiner's Answer at pages 12-13.

⁴ See Kubli, at col. 4, lines 8-16.

bridging pages 9 and 10 of the Examiner's Answer, the noise reduction device of Kubli in the resulting modified device would not be inherently capable of detecting effects of collisions between a gas and the rotor blades *so as to determine a change in an amount of or a molecular weight of the gas that passes through the exhauster.*

The device of Kubli performs feedback driven control in order to generate noise cancellation signals on the rotating equipment itself.⁵ Each of the embodiments described in Kubli includes an error sensor 10 that detects acoustical vibrations and inputs an error noise signal to a control circuit (20, 320, 420).⁶ The control circuit then sends a control signal to a noise cancellation device to either reduce or cancel unwanted noise detected by the error sensor.⁷ Specifically, the control circuit is operated by an algorithm or program that processes both the error noise signal from the error sensor 10 and machine force signals from the noise cancellation device to reduce broad band noise emanating from the rotating device.⁸ Thus, Kubli describes a device that is specifically programmed to drive a noise cancellation device on the basis of feedback signals from the error sensor 10 and the noise cancellation device with the sole purpose of performing noise cancellation. Simply adding such a device to the exhaust device of Tsukazaki would not be enough to perform the function of determining of a change in an amount of or a molecular weight of the gas that passes through the exhauster based on the signals from the error sensor 10, because the control circuit of such a device would not be programmed to make this determination. Therefore, such a device would need additional modification, at least in the programming of the control circuit,

⁵ Kubli at col. 2, ll. 35-36.

⁶ Kubli at col. 4, ll. 8-21; col. 5, ll. 4-10; col. 6, ll. 36-40; and col. 6, ll. 55-57.

⁷ Kubli at col. 4, ll. 27-60; col. 5, ll. 18-41; col. 6, ll. 7-43; and col. 6, l. 55 to col. 7, l. 10.

⁸ Kubli at col. 4, ll. 56-60; col. 5, ll. 64-65; and col. 6, ll. 40-43.

before being able to make a determination of a change in an amount of or a molecular weight of the gas that passes through the exhauster based on the vibration that is detected.

Moreover, although the endpoint detection device of Tsukazaki in the resulting modified device would be inherently capable of detecting an end point of the cleaning, the endpoint detection device of Tsukazaki in the resulting modified device would not be *based on a detection result* of the noise reduction device of Kubli in which the noise reduction device of Kubli detects effects of collisions between a gas and the rotor blades *so as to determine a change in an amount of or a molecular weight of the gas that passes through the exhauster*. This deficiency stems from the fact that the combined teachings of Tsukazaki and Kubli provide *no link whatsoever* between the detection of the effects of collisions between a gas so as to determine of a change in an amount of or a molecular weight of the gas that passes through the exhauster and an end point detector that detects an end point of a cleaning (claim 1) or a processing (claim 8). Instead, the teachings relating to end point detection in Tsukazaki are limited to a laser-based particle monitor *upstream of* an exhauster, and the teachings in Kubli are solely directed to active cancellation of unwanted noises emanating from rotating machinery. Thus, at best, incorporating the device of Kubli into the device of Tsukazaki would result in a system that performs the noise cancellation described in Kubli on the exhauster of Tsukazaki *entirely independent from* the end point detection of the laser-based particle monitoring device of Tsukazaki. Such a device would not be inherently capable of performing *all* of the functions of the operating state detector or the end point detector recited in either of Claims 1 or 8, because Claims 1 and 8 each recite a *link between* the detection of the effects of collisions between a gas so as to determine of a change in an

amount of or a molecular weight of the gas that passes through the exhauster and an end point detector that detects an end point of a cleaning (claim 1) or a processing (claim 8).

Accordingly, the examiner's rejection of Claims 1 and 8 is improper because even a device that results from the combined teaching of Tsukazaki and Kubli would not disclose, either explicitly or inherently, *all* of the features recited in Claims 1 or 8. It is respectfully requested the rejections of Claims 1 and 8 be REVERSED.

D. The Examiner's Answer fails to make a proper rejection under 35 U.S.C. § 103(a).

The question of whether a device is “capable of” performing a function is a question of inherency, whereas the question of whether a device is “capable of *being modified to*” perform a function is a question of obviousness under 35 U.S.C. § 103(a). *See In re Prater*, 415 F.2d 1393, 1406 (CCPA 1969) (“Assuming the existence, at the time of the invention, of general-purpose digital computers as well as typical programming techniques therefor, it is nevertheless plain that appellants’ invention, as defined in apparatus claim 10, was not obvious under 35 U.S.C. § 103 because one not having knowledge of appellants’ discovery simply would not know what to program the computer to do.”). *See also In re Mills*, 916 F.2d 680, 682 (Fed. Cir. 1990) (“While Mathis’ apparatus may be capable of being modified to run the way Mills’ apparatus is claimed, there must be a suggestion or motivation in the reference to do so.”). *See also In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992) (“The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.”).

As noted above, the devices of Tsukazaki and Kubli would require *several* modifications before they would be capable of performing *all* of the functions of the operating state detector or the end point detector recited in either of Claims 1 or 8. The examiner clearly erred by failing to articulate any reasoning with some rational underpinning to support a legal conclusion as to why it would be obvious *to modify* the devices of Tsukazaki and Kubli so as to be capable of performing *all* of the functions of the operating state detector or the end point detector recited in either of Claims 1 or 8. “[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006), *cited with approval in KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

Throughout the Examiner's Answer, the examiner maintains there is no need to provide a motivation to perform a modification of the devices of Tsukazaki and Kubli beyond simply adding the device of Kubli to the device of Tsukazaki so as to arrive at a device that meets all of the limitations of the pending claims because, in the examiner's view, the device that results from the combination of Tsukazaki and Kubli would be capable of performing all of the functions recited in the claims.⁹ However, as discussed above, Claims 1 and 8 each recite a *link between* the detection of the effects of collisions between a gas so as to determine of a change in an amount of or a molecular weight of the gas that passes through the exhauster and an end point detector that detects an end point of a cleaning (claim 1) or a processing (claim 8) that is *entirely absent from* the teachings of the cited references, and *well beyond the capabilities of* the structure of the devices described in the cited references.

⁹ See Examiners Answer at paragraph bridging pages 12-13

In fact, the closest the Examiner's Answer comes to providing an apparent reason for modifying the devices of Tsukazaki and Kubli to provide the link between the detection of the effects of collisions between a gas so as to determine of a change in an amount of or a molecular weight of the gas that passes through the exhauster and an end point recited in the claims is by *looking at Appellants' own disclosure*. Specifically, page 9 of the Examiners Answer states (emphasis added):

Assuming, arguendo, appellants are correct that there Kubli is silent regarding detecting the effects of such collisions so as to determine a change in an amount of or a molecular weight of the gas or detecting an end point of a cleaning, this deals with the intended use of the apparatus, rather than a patently significant structural distinction. The detection of collision effects obtained during use of the apparatus as per the Tsukazaki/Kubli teaching could be used, with more or less accuracy, to determine a change in an amount of gas that passes through the exhauster (for example, used in an algorithm wherein less vibration corresponds with less gas), as appellants have apparently discussed in the present application (see the specification at the top of page 23), but this is a feature that would properly limit a method claim, not the present apparatus

Determinations of whether the claimed subject matter is obvious must be made *in view of the prior art, not in view of Appellants' claims or Specification*. In *KSR v. Teleflex*, 82 USPQ2d 1385, 1397 (2007), the Supreme Court recognized “[a] factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments based on *ex post* reasoning.” (citing *Graham v. John Deere Co.*, 148 USPQ 459 (1966)). The Federal Circuit has also cautioned that “[w]e must still be careful not to allow hindsight reconstruction of references to reach the claimed invention without any explanation as to how or why the references would be combined to produce the claimed invention.” *Innogenetics, N.V. v. Abbott Labs.*, 85 USPQ2d 1641, 1648 n.3 (Fed. Cir. 2008).

In this case, the reasoning set forth in the Examiner's Answer relies specifically on the type of hindsight reconstruction the courts warn against.

Accordingly, the examiner's rejection of Claims 1 and 8 is improper because the examiner fails show *how* the combined teaching of Tsukazaki and Kubli either disclose or suggest *all* of the features recited in Claims 1 or 8. It is respectfully requested the rejections of Claims 1 and 8 be REVERSED.

E. The Examiner's Answer fails to properly address several of the features recited in dependent Claims 4 and 11, Claims 5 and 12, and Claim 17.

The Examiner's Answer fails to specifically point to *any* teachings in the cited references that either disclose or suggest (1) an end point detector that detects the end point of a cleaning or a processing based on *a change in the intensity of vibration*, as recited in Claims 4 and 11, (2) an operating state detector that includes a *rotation detector* that detects the change in the amount of or the molecular weight of the gas that collides with the rotor blades *by detecting a rotation of a body of revolution*, as recited in Claims 5 and 12, or (3) an end point detector that detects an end point of a cleaning or a processing by determining whether the amount of or the molecular weight of a gas colliding with the rotor blades *stabilizes* with the progress of the processing or cleaning following *a period of initially instability*.

With respect to Claims 4 and 11, the Examiner's Answer state “[a] change in the intensity of the vibration is a detection result from the operating state detector” without pointing to any teaching whatsoever in the cited references to support this statement. Indeed, Tsukazaki describes a laser-based system of particle monitoring, and Kubli describes an audio-based system for noise cancellation. Neither of these references disclose or suggest an

end point detector detects an end point of either cleaning or processing *based on a change in the intensity of vibration* a gas and rotor blades of an exhauster.

Likewise, the Examiner's Answer asserts, with respect to Claims 5 and 12, “[a] detection of a rotation of the body of revolution\ is a detection result from the operating state detector.” However, Claims 5 and 12 explicitly recite an operating state detector that includes a *rotation detector* that detects the change in the amount of or the molecular weight of the gas that collides with the rotor blades *by detecting a rotation of a body of revolution*. Neither of Tsukazaki or Kubli disclose or suggest a rotation detector that that detects the change in the amount of or the molecular weight of the gas that collides with the rotor blades.

With respect to Claim 17, the Examiner's Answer does not even attempt to show how the cited references meet this limitation, instead stating “these features relate to intended use, rather than structural distinctions.” As discussed in detail above, this position is inconsistent with the law.

Accordingly, the examiner's rejections of Claims 4, 5, 11, 12 and 17 is improper because even the combined teaching of Tsukazaki and Kubli fail to disclose or suggest all of the features recited in Claims 4, 5, 11, 12 and 17. It is respectfully requested the rejections of Claims 4, 5, 11, 12 and 17 be REVERSED.

F. The Examiner's Answer fails to properly address the means plus function limitations recited in Claims 20 and 21.

The Examiner's Answer fails to point to any teachings in the art that, either inherently or otherwise, corresponds to the structural features recited in Claims 20 and 21. Specifically, the Examiner's Answer fails to demonstrate *how* the cited references include any structure that provides a *link between* the detection of the effects of collisions between a gas so as to

determine of a change in an amount of or a molecular weight of the gas that passes through the exhauster and an end point detector that detects an end point of a cleaning (Claim 20) or a processing (Claim 21). For example, Claim 20 recites, among other things,

operating state detector means for detecting effects of collisions between a gas and the rotor blades so as to determine a change in an amount of or a molecular weight of the gas that passes through the exhauster; and

means for detecting an end point of the cleaning based on a detection result from the operating state detector means.

Thus, Claim 20 recites a *link between* the functions of detecting of the effects of collisions between a gas so as to determine of a change in an amount of or a molecular weight of the gas that passes through the exhauster and the function of detects an end point of a cleaning. Figure 5B of the present application, and the accompanying description at page 15, line 21 to page 17, line 3, and at page 22, line 25 to page 23, line 12 of the specification as originally filed, discloses structure that performs these *linked* functions. Figures 9, 12, 16 and 20 also illustrate examples that support the recitation in Claims 20 and 21.

As discussed above, at best, incorporating the device of Kubli into the device of Tsukazaki would result in a system that performs the noise cancellation described in Kubli on the exhauster of Tsukazaki *entirely independent from* the end point detection of the laser-based particle monitoring device of Tsukazaki. Therefore, the structure would not performed the *linked* functions recited in Claims 20 or 21. Contrary to the assertions at pages 16-17 of the Examiner's Answer, such a device would not be inherently capable of performing *all* of the functions of the operating state detector means or the means for detecting an end point recited in either of Claims 20 or 21, because Claims 20 and 21 each recite a *link between* the detection of the effects of collisions between a gas so as to determine of a change in an

amount of or a molecular weight of the gas that passes through the exhauster and an end point detector that detects an end point of a cleaning (claim 20) or a processing (claim 21f).

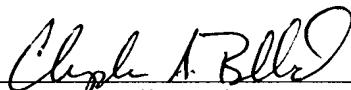
Accordingly, the examiner's rejection of Claims 20 and 21 is improper because even the combined teaching of Tsukazaki and Kubli fail to disclose or suggest all of the features recited in Claims 20 and 21. It is respectfully requested the rejections of Claims 20 and 21 be REVERSED.

G. Conclusion.

In view of the foregoing, it is respectfully submitted the cited references, whether considered alone or in combination, fail to disclose or suggest the combined features set forth in any of Claims 1-5, 8-12 and 17-21. Accordingly, it is respectfully requested that the rejections of Claims 1-5, 8-12 and 17-21 be REVERSED.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, L.L.P.



Steven P. Weihrouch
Attorney of Record
Registration No. 32,829

Christopher A. Bullard
Registration No. 57,644

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413-2220
(OSMMN 07/09)